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ABSTRACT

The New Jersey Vocational Needs Assessment Project was designed to determine the needs of industry and business for those areas where public vocational education serves as the primary training agency. Information was obtained from school questionnaires and employer questionnaires and interviews. References to six critical issues were most frequently expressed: (1) competencies for employment need to be identified; (2) minimum standards need to be established and used as a base for "credentialing" programs in vocational education; (3) fiscal support of programs should be directly tied to accountability; (4) more extensive involvement of business and industry in the planning and delivery of educational programs would be beneficial to all parties; (5) vocational education services should be marketed more extensively; and (6) cultural diversity must be addressed. Responses regarding the top 15 items of concern are given in percentages on a chart and a bar graph. (The document includes summaries of 10 national reports from government agencies, research institutes, and private organizations. A bibliography of 14 New Jersey references and 28 national references is included.) (CML)

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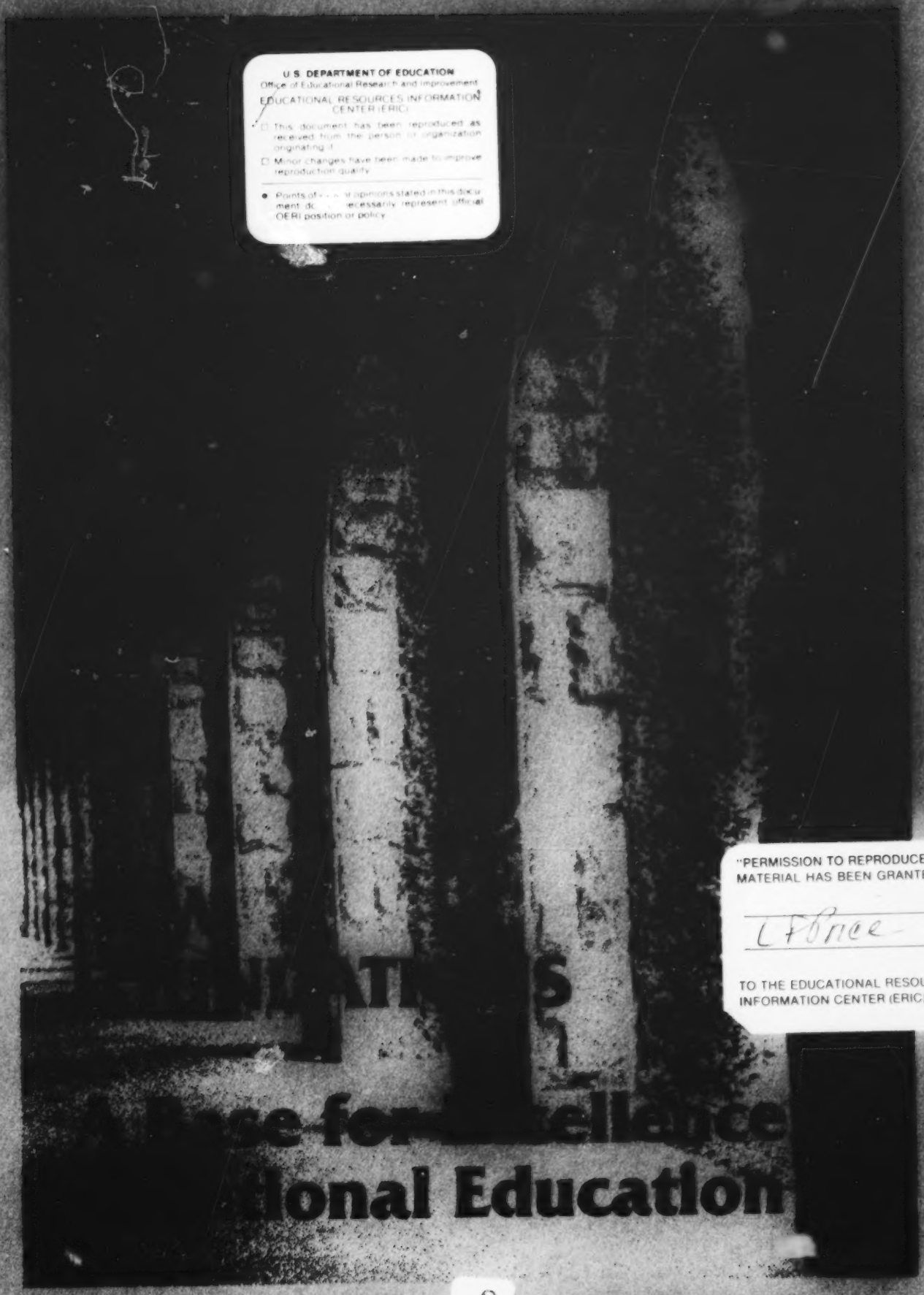

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NEW FOUNDATIONS

A Base for Excellence in Vocational Education

New Jersey
Vocational Needs Assessment Project
1989-1990

Directors
Donald L. Andersen • Frank J. Orlando

Funded by
State of New Jersey
Department of Education
Division of Vocational Education

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PROJECT OVERVIEW

The Needs Abstract

Economic studies and demographics for New Jersey forecast two incompatible trends regarding the labor force for the 1990's. Although the State's economy will continue to create ample employment opportunities, the estimated number of entrants into the labor force will be insufficient to meet the projected need. This possible shortage can be averted if the vocational education system in New Jersey assumes a leading role and provides the skills necessary to participate effectively in the labor market. In order to meet this need, an assessment of the needs of industry/business and of the avenues for vocational education was undertaken.

The most viable approach to this problem, due to regional variations regarding the labor market, was to implement a needs assessment study on a statewide basis. Since the basic goal of vocational education is to provide training that will lead to successful job skills and employment; it was imperative that those skill needs be included in any needs assessment study. Therefore, this project used input from employers in the private sector to help define the priority areas and needs of industry. This data, then, was correlated to the existing and projected offerings of vocational schools in New Jersey.

The Project Goals

The New Jersey Vocational Needs Assessment Project was designed to determine the needs of industry/business for those areas where public vocational education serves as the primary training agency. The ultimate result will be the alignment of vocational education with the needs of industry/business during the present decade and in the forthcoming millennium. Toward this end, five major goals were identified for the New Jersey Vocational Needs Assessment Project:

1. To identify the existing and projected avenues of vocational training available in New Jersey public schools.
2. To identify the existing and projected labor force needs of New Jersey in the ten highest ranked areas for vocational education.
3. To identify the perceived needs of industry which are and are not being met by public vocational education.
4. To identify specific plans and procedures regarding the alignment of education offerings and industrial/business needs, with emphasis on the process of implementing change.

5. To identify and establish a process for an on-going needs assessment of industry/business for vocational education in New Jersey.

Examples of Input

Input for this project was obtained from two sources, the educational community and the employment sector. A listing of this input includes the following items:

The Educational Community

- Vocational programs
- Course offerings
- Existing enrollments
- Projected enrollments
- Programs under development
- Short term plans (1-2 years)
- Long term plans (3-5 years)
- Curriculum guides
- Course outlines
- Advisory committees
- Faculty training options
- Major employers
- Regional labor market needs
- Skill needs in vocational areas
- Texts and references

The Employment Sector

- Labor force needs
- Commonalities for employment
- Job specific skills
- Training goals and problems
- Skill strengths of vocational students
- Skill needs of vocational students
- Educational expectations
- Reasons for employee retention
- Reasons for employee dismissal
- Major employment pools from education
- New and emerging skill needs
- Advisory committees
- Education-employment linkages
- Employment input to education

PRIMARY SOURCES OF DATA

A. Educational

1. Secondary Schools

County Full Time Vocational Schools

County Shared-Time Vocational Schools

Local Area Vocational School Districts (LAVSD)

Comprehensive Schools with Vocational Programs

Comprehensive Schools with Vocational Courses

2. Post-Secondary Schools

County Colleges

Accredited Private Vocational Schools

3. Other Sources

Members of Professional Educational Associations

B. Industrial

1. Vocational School Related

Vocational School Advisory Committee contacts

Vocational Teacher Advisory Committee contacts

2. Non-Vocational School Related

On site visits and phone conversations

Attendance at meetings of Business Organizations

Contacts made through County Chambers of Commerce

Contacts made through Industrial Councils

Contacts made through other Business/Industry workers

Contacts made through P I C s

Random meetings with people involved in Business/Industry

PRIMARY SOURCE FINDINGS

INTRODUCTION

In an era when so much emphasis is placed on technology, and everything is "Hi Tech," one would expect to find employer needs emphasizing the need for intensive training in the vocational schools with more emphasis on teaching the latest technology. That is what the researchers had anticipated at the start of this Needs Assessment Project. The expectation was to develop a hierarchy of technical training needs. This would be accomplished in two phases (A) The identification of existing and projected avenues of vocational training available in New Jersey. From this the researchers could identify and rank enrollments in present vocational programs, projected enrollments in areas under development and vocational school enrollments in these programs. (B) The identification of those industrial needs which are not being met by vocational education. This would establish a listing of the top present and anticipated needs as identified by employers. This list would then be compared to the available training and thus identify the areas of need for program development.

Although the response to questionnaires sent to schools was much higher than anticipated (so few failed to respond to the original mailing that a phone follow-up was possible); employer response was so limited that face

to face contact was necessary. The probable reasons became evident when meeting with employers and through their remarks. As an example, one employer informed the researcher he had two minutes to present his "pitch" and get the employers response. When shown the brochure and given a brief introduction of the project the employer wanted to know if we were "really looking for information or just support for another educational project". When assured of confidentiality and a real interest in gathering information, a 25 minute discussion developed. This was not unusual but normal in the data gathering contacts with employers. Many of whom are frustrated trying to compete in a global market with a severe shortage of workers; especially in the 20 to 34 age group. Many of these same individuals are often poorly prepared and/or not interested in work, with no real indication that the situation will change in the near future. One employer compared the educational system to the Detroit auto makers before the Japanese competition began, only education has a monopoly, "it needs Japanese competition".

A random selection process was used to select 46 employers from the list of the top 125 industries in the state and the employer identified needs instrument was sent to them. It was also sent to a random selection of employers from a wide variety of company sizes and trades. However the mail response to the employer

identified needs assessment from industry was not very encouraging. Therefore, most of the information was gathered through face to face contact, sometimes with a phone conversation follow up. Most interviews at larger companies (1000 or more employees) and medium size companies (500-1000 employees) were with Human Resource or Personnel Managers. Some were with foremen, heads of departments, plant managers or vice presidents. Most interviews at small companies (500 or less) were with managers or owners. Much information was gathered by informal conversation with employers.

Although the researchers are committed to confidentiality, they have taken the liberty to quote anonymously from many of contacts made in both the educational and business/industrial fields. This was done to convey not only the factual information gathered, but to give it a flavor or emphasis that would be lacking without it. Also, many statements made a point so much more accurately and eloquently than could have been made by the researchers.

The findings emphasize the critical need to improve basic educational training in the schools. Employers agree that technical training is important and higher training levels of technology make industry more competitive. However, other problems far outweigh that need. As one employer suggested "You don't worry about watering the lawn when your house is on fire."

THE FINDINGS

Education

The project began with a survey of the training available. A list of all the secondary schools offering vocational programs or courses was compiled. This was accomplished by securing data from the New Jersey State Department of Education and the Division of Vocational Education. The data did not include information on new and intended offerings, so a questionnaire was sent to every school offering vocational programs or courses. Information requested included courses and programs started in the past three years and those planned for implementation in the next three years. From the results of the State information and the responses from schools, a list of available areas for trade training was formed.

Information was also collected from The Department of Labor, New Jersey Occupational Information Coordinating Committee, New Jersey Business and Industry Association, South Jersey Education Consortium and others. In comparing information from these sources and that from secondary school responses, some important areas appeared to be missing. Research revealed that some of these needs were being met through the county colleges.

Consequently, a listing of all the county colleges was obtained from the Department of Higher Education, Office of Community Colleges. A list of all the accredited private vocational schools was obtained from The National Association of Trade and Technical Schools. Information gathering instruments were sent to all schools on both lists and that information added to the list of available trade training areas.

A list of training areas was developed from this information and categories selected for further investigation to determine the match/mismatch between the needs of industry and the present and planned needs of business/industry. A questionnaire was developed and plans made for contacts with business and industry by mail and using on site visitations.

It appeared that the development and planned additions of new programs and courses from available sources at the secondary and post secondary levels were in line with advancing technology and could supply a respectable number of trained personnel. Information gathered at this point indicated that vocational programs have the potential to meet most technical needs of industry if the vocational schools are able to recruit students with abilities and potential to complete those programs.

Employment

In order to obtain a listing of employer needs that was accurate, and eliminate bias as much as possible, the researchers decided to gather information using two basic sources: (A) employers with an established relationship with vocational education through participation in advisory committees and (B) non-advisory related contacts.

The original intent was to send a questionnaire based on the areas identified through the educational information that had been gathered and ask employers to help us prioritize technical training needs. However, after the experience of missing important areas in gathering educational information, it was decided to use an employer developed listing of needs. (This will be presented in more detail later.) Response by mail was disappointing so face to face contact was required.

The results were somewhat surprising, as it was expected that a stronger emphasis would be placed on technical training. The high technology emphasis is there, but the expectation for that type of training is placed more on the post secondary (community college) programs or company/industry training programs. The items employers identified as "needs to be addressed" at the secondary level are much more basic. In some of the areas where the need for a higher level of technical training is expected--for example, electronics--most

wanted a good basic training followed by post secondary and/or company/industry training. In automotive technology, employers stressed reading ability and basic familiarity with electronic test equipment. Companies or dealers will provide specific training on their own equipment. Many of the needs expressed fall into the category of work attitude in vocational education.

It is not difficult to understand the employers frustration, for in a world of international high technology competition, they can not get employees with basic skills and acceptable work attitudes. It is also difficult for many employers to distinguish between students who have attended vocational school and students who have not. Even those who have attended vocational school often tend to stretch the truth. (One employer told of a "vocational student" who was not doing well, and when asked how he did in vocational school replied "I guess O.K." When pressed further about his grades, he confessed he didn't stay long enough to get grades but thought they would have been good.)

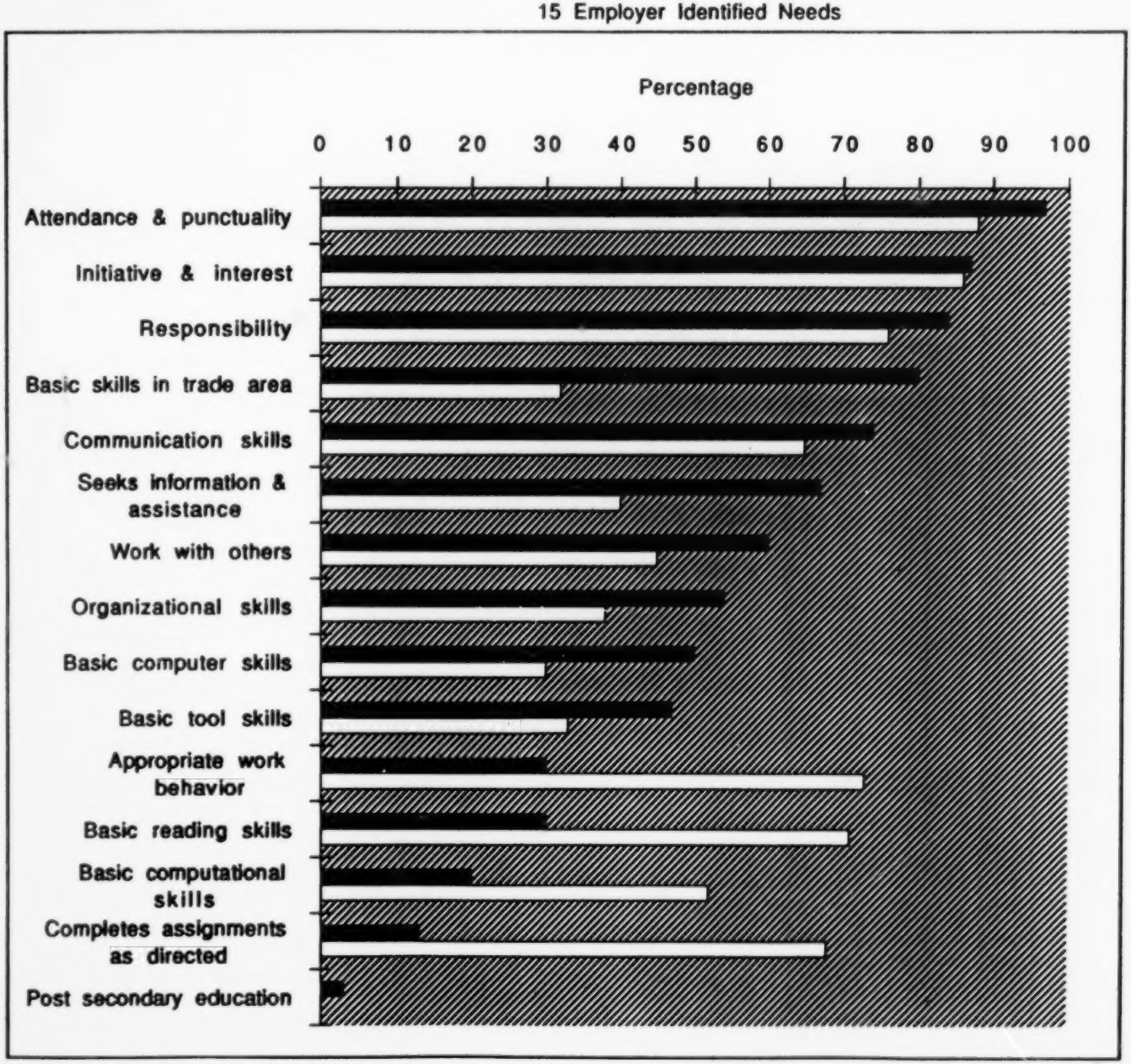
Many employers are satisfied with the skills of their current employees but are very concerned about the need for retraining when plant improvements are made, when plant expansion is needed, and replacing workers when their present work force retires. Some discovered the "vocational school stigma" when they attempted to retrain some of their present employees by sending them

to evening classes at a vocational school. An employee who was respected by fellow workers as a craftsman or line leader, felt intimidated with the risk of loosing "respect" by "going back" to vocational school. These same workers did not have a problem with "going on to college" at a community college, although they may have the same instructor (from the vocational school) and cover the same material. Employers who have had CIE students (or other forms of cooperative work programs) generally found that a quite satisfactory method of recruitment, but many do not get enough employees from these sources.

Most employers are satisfied with post secondary school graduates, but many quickly add that they feel a screening process has already taken place for those attending post secondary schools. These individuals have already made a personal commitment to learning and working. Many were also concerned with the growing disparity between those who have gained some skills and those who have not. What they see as even more disturbing is the lack of interest in improvement on the part of those without skills or proper work attitudes. Many employers feel that efforts to prepare young people to become workers is a waste of money until they want to improve their lot. One even went so far as to say, (I hope in jest), "What we need is a good depression, and the way we are going, we will probably get it."

In preparing the employer developed listing of needs, the researchers made contact with randomly selected employers from each of the trade areas identified in the educational segment of the research. The gathering of information continued until data was available from approximately 100 employers. Employers were asked simply to identify the 15 (or as many as readily came to mind) most important areas in which worker training was needed. The results was organized into 15 worker traits. This provided the basis for the "employer needs instrument" to complete the data gathering. Information from both advisory and non-advisory related contacts was very similar except advisory related contacts were generally more gentle in their comments on education.

Although just over 300 employers were contacted, this is a very small sampling of the many employers in the State of New Jersey. The sample included a variety of sizes of employers, (32,000 to 5 including the owner), with all of the areas identified in the educational survey represented. Input was also obtained from a cross section of management levels from small business owners to corporate Vice Presidents, human resources directors, job foremen. In practically all cases, the responses were surprisingly similar.


15 Employer Identified Needs
Percentage
0
10
20
30
40
50
60
70
80
90
100
Attendance & punctuality
Initiative & interest
Responsibility
Basic skills in trade area
Communication skills
Seeks information & assistance
Work with others
Organizational skills
Basic computer skills
Basic tool skills
Appropriate work behavior
Basic reading skills
Basic computational skills
Completes assignments as directed
Post secondary education
Legend
Percent of time mentioned.
Percent of time in first 5 items when mentioned.

The top 15 items identified by employers were:

	Item identified	% of time identified	When identified % of time in 1st. 5 items
1.	ATTENDANCE AND PUNCTUALITY	97%	88%
2.	INITIATIVE AND INTEREST	87%	86%
3.	RESPONSIBILITY	84%	76%
4.	BASIC SKILLS IN TRADE AREA	80%	32%
5.	COMMUNICATION SKILLS	74%	65%
6.	SEEK INFORMATION AND ASSISTANCE	67%	40%
7.	WORK WITH OTHERS	60%	45%
8.	ORGANIZATION SKILLS	54%	38%
9.	BASIC COMPUTER SKILLS	50%	30%
10.	BASIC TOOL SKILLS	50%	33%
11.	APPROPRIATE WORK BEHAVIOR	30%	73%
12.	BASIC READING SKILLS (instructions, manuals, etc.)	30%	71%
13.	BASIC COMPUTATION SKILLS	20%	52%
14.	COMPLETE ASSIGN-MENTS AS DIRECTED	13%	68%
15.	POST SECONDARY EDUCATION	3%	-0-

Additional Information About The Items

Item 1. In most cases the first response from employers was they (employees) have to come to work; others added "on time" or "or call in". One told of hiring an employee for the morning shift. The first three days he arrived at 7 AM, Thursday it was 9 AM. Friday when he arrived at 9 AM, the employer spoke to him. Next week Monday and Tuesday were OK, Wednesday he arrived at 1 PM and said "I have decided I can't make the morning shift so I will come to work for you in the afternoon." The

employer needed help, but let him go.

Some felt that they (the employers) had helped to make the problem because they fired undeserving or incompetent employees, then later hired them back because they were unable to get good help. This too may have sent out a wrong signal.

Item 2. Many employers felt that their employees (especially incoming ones) were more interested in cash now instead of advancement later.

Item 3. Although jobs with additional responsibility pay more, many found a lack of interest in those jobs. Some employees quit when given jobs with more responsibility and more pay because they said "it wasn't worth the stress".

Item 4. In most cases, the technical skills required were mentioned in the middle or later half of the items ranked (often 6, 7 or 8) when employers were asked to list skill needs. This probably indicates a more immediate concern with work ethic problems and basic educational skills than technical skills. Later in the conversations when technical skills were discussed, most employers expressed a need for "basic technical skills" when referring to the trade. Most were willing and felt they could help provide job specific training, but as one said "They have to show up and try".

Item 5. The question was often asked "If the schools are doing their job, how come we have so many more young

people who can not read, add, talk, or understand simple things?"

Item 6. Many employers felt that too many of their employees would either not do anything or go ahead and do the job wrong rather than ask for assistance.

Item 7. Many young people emphasize their rights to individuality and do not want to be team players. Employers attribute this to many causes. One bears quoting because it is an interesting observation and makes some good points although everyone may not agree with everything stated. "The problem is the dress code. In the Army they dress you all alike and you all act as a unit. The schools did away with the dress code and got individuals with discipline problems. They took religion out and lost morals. They did away with the flag salute and got flag burners. They teach rights and protest, kids learn that before they leave the crib. They teach them to play, but not to work. They teach them how to drive and have sex, they will learn that soon enough on their own. They teach them how to do everything but read and write and that is what they should be teaching them."

Item 8. Organization skills have to do with getting ones act together to do a job. This was often lacking in younger workers.

Item 9. Basic computer skills are more likely to be lacking in older workers, often some of the better ones. A person who has been respected as a leader on a

production line does not want to go back to the vocational school. Employers found greater success with sending them to a community college even for the same course, taught by the same instructor. Older workers are sensitive to their image. Younger workers are more likely to have computer skills, but often lack good judgment in using them.

Item 10. Basis tool skills covers a variety of different "tools" depending on the trade. This usually refers to generic tools from wrenches to price markers to thermometers, etc. Use of them is important and expected by a wide range of people in the trade. One should be able to assume that prospective employees have these skills, but that is not always the case.

Item 11. Appropriate work behavior was a catch-all category for things like inappropriate dress (e.g.: sweats in the store or office and designer jeans in the auto body repair shop, school socialization/work socialization).

Item 12. Basic reading skills appeared among the top 5 items in areas where they were least expected; those sometimes referred to as "blue collar" workers. This was especially consistent in automotive technology, auto body, construction, etc. Certainly these skills are much needed in health, office, and other areas, but students that choose these areas may already have reading skills that are sufficient.

Item 13. Lack of computational skills ranged from recognizing realistic calculator results (example from a retailer: a customer buys a short and a tie, if the employee misses a decimal point or a zero it is not picked up; he/she may try to charge the customer $35.00, $350.00, or even $3,500.00), to the inability to convert problems to numbers (example: a mixture contains 5 lb. of one material, 67 lb. of another, and 26 lb. of a third. If the ratio is to be changed so that it contains 10% of the first ingredient, how much do we add of that ingredient? Or more simply, if we want to change the pitch of a roof, how much longer must the rafters be?).

Item 14. Although not mentioned too often, those who did mention the ability to complete assignments as directed felt it to be very important. This is evident by its placement in the top 5 items when it was mentioned. Some employers felt this was covered by another item.

Item 15. Where post secondary training was required, employers felt there were fewer basic work ethic problems because the employees had already passed a screening process by being admitted to a post secondary school.

Responses to questions at interviews of employers who did not have a link to vocational schools indicated that for the most part, they did not make a distinction between vocational schools and comprehensive schools. In addition they failed to recognize the difference between

vocational programs and vocational courses.

The dark side is that most employers felt that the educational and training system has failed. The bright side is that they felt business and industry have to get involved with the educational and training process. Most indicated a willingness but were quick to add "this is not my area" (of expertise).

Many employers were very critical of the education system. They pointed out that salaries are higher, schools are better equipped, and education costs per student are greater; still it seems that an increasing number of graduates are for all practical purposes functionally illiterate. This does not make sense to a business person's mind. Some of their comments ranged from calling it "a monopoly without regard to product quality", to "a complete bureaucratic failure, only interested in salary". Some went so far as to say, "They should all be fired and we should start over." or "We should back the bus up to the schoolhouse and clean it out."

Many believe the problem is not just the school's problem, it is a problem of our whole society. However, they stated that the schools seemed anxious to take on the problem from society. Further conversations indicated few educators objected when social problems were added to educational requirements. "They wanted the job, but didn't know how to do it." Practically all saw

the need for something to be done SOON. Two points were often made, (1.) Our society has undergone major changes, and (2.) If public school educators are not willing or able to bring about the needed changes in basic education and work attitude, those changes must evolve through other means. If not, we risk the possibility of becoming a third rate nation.

After gathering the information from business/industry the researchers posed these questions to themselves, "If business and industry have such strong feelings about their needs in basic education and vocational schools have members of these groups on their advisory boards, the schools must be aware of this need. If not, why not? If so, are they doing anything about it?" Therefore, additional contact was made with a number of types of vocational schools (full time, shared time, LAVSD, comprehensive schools with vocational programs, and comprehensive schools with vocational courses). Although the school year and the project duration time ended before complete information could be gathered, it was evident that some are doing a lot, some are doing little, in some cases it is difficult to determine what is being done.

There are numerous examples of efforts being made to increase the high technology training levels at vocational schools. There are also encouraging examples of new efforts at some shared time vocational schools to

provide instruction in Math, Science, Reading and Writing. No longer can vocational schools take for granted that students coming to them have basic educational skills. In some cases, the need for remedial work in one or more of these basic educational areas could eliminate the possibility of attending vocational school. Schools that are taking this approach are often finding that vocational education can provide a new value to education for the student. Some shared time vocational schools have employed teachers certified in Math, Science, Language Arts and other areas, so that the vocational school can provide the opportunity of vocational school attendance while meeting graduation requirements. This also serves to meet the proficiency in basic educational areas that are so important to function successfully in their chosen vocational area. An example stands out where a vocational student asked his Math teacher to explain how a formula in Geometry can come up with the right answer. After being shown how a problem in math can be represented graphically and actually measured to the points being calculated, he tried a few of his own examples and said "I'll be dammed, it works every time". It is too bad he had to spend 11 years in school before finding out that what his teachers were trying to teach him was real and that it works.

It is important to note that New Jersey is not alone with these problems. The researchers have observed

similar problems in neighboring states and are trying to keep up to date on what is being done to solve those problems. They also have identified a list of attempts to solve pertinent vocational educational problems in a variety of ways.

A symposium was held at the end of the project. This was attended by members of the business/industry community, vocational school administrators, representation from the New Jersey Department of Education, Division of Vocational Education, consultants, and the researchers. More information on this symposium will be presented in the CRITICAL ISSUES section of this report. A general consensus of the meeting indicated that the findings of the research are accurate and the problems need to be addressed without delay.

Further research is needed in New Jersey regarding cooperative ventures and outreach programs involving business, industry, and education. Data should be gathered on what is being tried and what is working so that success can be shared and false starts eliminated. Perhaps the most important thing is not to prejudge attempts being made at creative solutions. In seeking solutions to problems it is important to remember that if everyone is thinking alike it is a sign that no one is thinking. One must look beyond the surface to really find out what is happening. Hopefully this research project will not end by just identifying the problems.

To stop here would ignore the most important part of research: to point to possible solutions to the problem.

This research has provided more questions than answers. Hopefully, more of the right questions have been asked. Who is at fault is not the important question. What is really important is what do we do to improve the situation and who can do it? It seems obvious we need to make some changes, perhaps some are now being made and have not shown up in the work place yet. Let us remember, we did not get here overnight, we will not get out of here in a day.

RESEARCH RELATED DATA

The five goals of the Vocational Needs Assessment Project were addressed on two fronts: (1) by acquiring input from primary sources [which was discussed in the previous section] and (2) by reviewing the large body of research related to the goal issues. This research not only underscored the validity of the questions and concerns regarding New Jersey, it provided important input and direction during the process of identifying those areas where additional research is needed.

Although it would be impossible to discuss all of the studies and reports which were reviewed during this project; it is possible to provide insight into some which have been accorded national recognition. The documents discussed in this section include:

America's Hidden Treasure: The Urgent Need To Recognize and Promote the Nation's Vocational-Technical Education System.

Occupational Competencies Report: The Electronics, Health Service and Construction Industries as Surveyed by the Trade Associations.

Occupational Competencies: A Study of the Vocational-Technical Education Needs of the Agribusiness and Chemistry-Based Technology Industries.

National Assessment of Vocational Education, Volume I: Summary of Findings and Recommendations.

Building a Quality Workforce.

Workforce 2000: Work and Workers For The 21st Century.

Work-Based Learning: Training America's Workers.

Investing in People: A Strategy to Address America's Workforce Crisis.

Corporate Action Agenda: The Business of Improving Public Education.

Labor Force 2000: Corporate America Responds.

These ten reports represent input from agencies as diverse as the National Council on Vocational Education, the U.S. Department of Labor, the U.S. Department of Education, the Hudson Institute, the National Alliance of Business, and the Allstate Forum on Public Issues. Although their vantage points and orientations vary, their concerns regarding vocational education and the American workforce are remarkably similar. Of even greater significance is the fact that in many cases their suggestions for addressing these concerns are also shared.

Full documentation for these resources, as well as a listing of additional resources, will be found in the "Selected Bibliography" section of this report.

America's Hidden Treasure: The Urgent Need to Recognize and Promote the Nation's Vocational-Technical Education System. [Unabridged Version.] Washington, D.C.: The National Council on Vocational Education, 1989.

The National Council on Vocational Education was established under the Carl D. Perkins Vocational Education Act of 1984 to advise the President, Congress, and the Secretary of Education on issues pertaining to vocational-technical education. The 1989 report of the council identified twenty-eight recommendations which were organized according to the mandates of the Perkins Act. These mandates are:

1. Improve the implementation and effectiveness of the Vocational Education Act.

2. Provide strategies for increasing cooperation between business and vocational education so that training is available for new technologies.

3. Provide approaches to retraining adult workers and to enhancing education, business, and labor cooperation in retraining efforts.

4. Provide access to information regarding the market demand for skills.

5. Advise on the vocational needs of the handicapped and the level of participation of the handicapped in vocational education programs.

6. Advise on the implementation of this Act and the Job Training Partnership Act and policies needed to expand and improve vocational-technical education programs (and apprenticeship programs).

7. Provide current information on the types and levels of occupational competencies necessary for entry and sustained productive employment.

Occupational Competencies Report: The Electronics, Health Service and Construction Industries as Surveyed by the Trade Associations. Washington, D.C.: National Council on Vocational Education, April, 1989.

This occupational competencies report is one in a series of reports being funded by The National Council on Vocational Education. The working groups function independently and submit their findings to the National Council for publication. These reports are not competency lists, but rather, are guidelines to developing the list of competencies. The topics discussed for each area include projected number of employees needed over the next 5 to 10 years, skill requirements, equipment, facilities, methods and procedures, and resources and training materials developed by the industries.

Certain common needs were voiced by members of all three industry working groups. These were:

1. Recruit.
2. Begin career awareness programs early, as early as elementary school.
3. Develop more self-help, stimulating learning materials that encourage information retention.
4. Keep vocational-technical instructors informed of current industry trends by attending conferences, trade shows and association meetings. Involve industry in the training of vocational-technical instructors.

5. Develop cooperative business/industry and education programs. Define the programs with written agreements so each entity knows exactly what is expected, what the limits are and who is responsible to make it happen.

6. Correlate curricula between secondary and post-secondary programs to avoid duplication of material. Introduce basic skills early and reinforce them through hands-on training.

7. Provide vocational-technical facilities with adequate space, enough state-of-the-art equipment of durable quality, adequate resources and reference materials and teachers with current knowledge of the industry.

Occupational Competencies: A Study of the Vocational-Technical Education Needs of the Agribusiness and Chemistry-Based Technology Industries. Washington, D.C.: National Council on Vocational Education, January, 1990.

This is the second competencies report published by The National Council on Vocational Education. The "Summation" section included the following points:

> In the various occupations of both industries, employers are looking for employees with values in ethics, self-discipline, responsibility, decision-making, and interpersonal relations.
>
> Representatives of both industries listed these actions that need to be taken:
>
> 1. Teach elementary school students to be competent in the basic skills of reading, writing, math, and science. Encourage high school students to become proficient in oral and written communications, math, and science.
>
> 2. Recruit young people into the occupational fields, and increase public awareness of what these occupations contribute to society.
>
> 3. Enhance the image of vocational-technical education programs as a way to expand opportunities.
>
> 4. Keep vocational-technical instructors current with the industry by making it possible for them to attend conferences, trade shows, and association meetings, and by involving industry in the training of vocational-technical instructors.
>
> 5. Develop cooperative education programs.
>
> 6. Write sequential curricula for secondary and post-secondary vocational-technical education programs.

7. Develop models for competency-based education programs that provide up-to-date technical skills, a core of occupational knowledge, and a general education needed for career advancement and lifelong learning.

8. Provide vocational-technical education facilities with adequate space, enough modern equipment of durable quality, adequate resources and reference materials, and teachers with current knowledge of the industry.

9. Cooperatively (employers and educators) develop a list of occupational competencies, and design methods of certification.

10. Develop affordable, accessible continuing-education materials.

11. Actively seek funding for recruitment, curriculum writing, facilities, teaching materials, equipment, and faculty.

12. Survey employers to gather information on job markets, human capital demands, and educational needs for the next 10 years.

13. Follow through on student placements and job performance.

National Assessment of Vocational Education, Volume I: Summary of Findings and Recommendations. Washington, D.C.: U.S. Department of Education, July 1989.

The National Assessment of Vocational Education was mandated by the Congress of the United States. The final report of the National Assessment consists of five volumes.

Volume I - Summary of Findings and Recommendations

Volume II - Implementation of the Perkins Act

Volume III - Secondary Vocational Education

Volume IV - Postsecondary Vocational Education

Volume V - Handicapped and Disadvantaged Students

In its discussion of secondary vocational education and job specific skills, the National Assessment expressed the following view:

> One of the major issues confronting secondary vocational education is the extent to which it should emphasize job specific training as opposed to broad occupational training or even training that is of a very general (or transferable) nature. The case for job specific training depends in large part on the performance of secondary vocational education in placing students in training-related jobs. The National Assessment has conducted a thorough analysis of this issue.
>
> Our analysis is based on a new performance indicator, the "skilled jobs course utilization rate," which measures the share of all specific occupational vocational courses employed in training-related jobs that require more than minimal skills. This indicator provides a more complete and accurate assessment of the labor market than other indicators, such as the training-related placement rate. The measure accounts for the skill levels of jobs held by students who have received training and excludes jobs requiring low levels of skills.

The National Assessment recommended six objectives for federal policy on secondary vocational education:

1. Revise and rebuild the high school vocational curriculum to upgrade skill levels and provide students with the mix of occupationally specific and transferable skills they need to get good jobs or to pursue further training and education at the postsecondary level.

2. Integrate high school academic and vocational curricula so that students come to vocational programs well equipped with fundamental academic skills and that vocational courses provide an applied context, based on broad and specific job training, that reinforces and enhances academic skills and motivates students to excel in both academic and vocational courses.

3. Accelerate the education of at-risk students by providing them with the extra assistance they need to succeed in demanding and highly rewarding vocational courses.

4. Expand efforts to place students in good jobs that make full use of their vocational and academic training.

5. Improve the linkages between secondary and postsecondary training so that training is highly complementary for the large group of students who obtain instruction at both levels.

6. Raise the quality of vocational programs in schools with high concentrations of poor and low achieving students.

Building A Quality Workforce. Washington, D.C.: U.S. Department of Labor, U.S. Department of Education, U.S. Department of Commerce, July 1988.

This report is the result of a joint effort of the Department of Labor, the Department of Education and the Department of Commerce to address one agenda--building a quality workforce to meet the needs of a new technological society. The project began with six primary objectives:

1. To identify what business receives--the basic skills and workforce readiness of our nation's entry level workers.

2. To identify what business needs--business requirements for entry workforce competencies now and in the future--to increase productivity and remain competitive in the world economy.

3. To identify the skill gaps--the deficiencies in our entry workforce.

4. To explore how education is responding to this challenge--their progress, performance, accountability, and their perceptions of how well they are doing in meeting business' demands.

5. To challenge each sector--education and business--to do more, individually and through productive, broad, community-wide partnerships, to improve the way we prepare our students to succeed as good workers and good citizens.

6. To provide examples of successful community efforts--to stimulate greater interest and involvement in building a quality workforce.

The following conclusions/recommendations are offered regarding how we can close the skills gap.

Strengthen Our Educational System

...it is worth noting that educators can improve their processes and their products by learning from successful businesses and seeking their help.

1. Increase accountability.

2. Strengthen the content of the curriculum and improve its delivery.

3. Recruit and reward good teachers and principals.

4. Improve educational opportunities and performance of the disadvantaged.

5. Increase competitiveness.

Expand Business Involvement

Business should expand its involvement and investment in our education system ...in ways that improve educational effectiveness and efficiency. Business should participate actively in policy, educational improvement, and management activities.

1. Take the initiative to broaden the base of political support/advocacy for the schools.

2. Develop community-wide collaborative efforts that increase communication and decrease the isolation of the education and the business communities.

3. Undertake initiatives that assist schools in good management practices.

4. Work to improve business' labor force planning for the short-and-long-term.

Workforce 2000: Work and Workers For The 21st Century. Executive Summary. Washington, D.C.: Department of Labor. [Hudson Institute, 1987.]

The Workforce 2000 project was a collaborative venture of the Hudson Institute and the U.S. Department of Labor. Among the many topics addressed in this study was the issue of "Workers and Jobs in the Year 2000." The study identifies five demographic facts which will be the most important.

1. The population and the workforce will grow more slowly than at any time since the 1930's.

   ...the labor force, which exploded by 2.9 percent per year in the 1970's, will be expanding by only 1 percent annually in the 1990's.

2. The average age of the population and the workforce will rise, and the pool of young workers entering the labor market will shrink.

   The number of young workers age 16-24 will drop by almost 2 million, or 8 percent.

3. More women will enter the workforce.

   Almost two-thirds of the new entrants into the workforce between now and the year 2000 will be women...

4. Minorities will be a larger share of new entrants into the labor force.

   Non-whites will make up 29 percent of the new entrants into the labor force between now and the year 2000, twice their current share of the workforce.

5. Immigrants will represent the largest share of the increase in the population and the workforce since the first World War.

Work-Based Learning: Training America's Workers. Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, November 1989.

Although this report was issued under the auspices of the Employment and Training Administration, its publication closely paralleled the creation of the Office of Work-Based Training by Secretary of Labor Elizabeth Dole. The recommendations cited in the report are largely based on an earlier initiative of the Department of Labor (Apprenticeship 2000).

> Based on these (and other) key findings, the Department [of Labor] should take the initiative to provide new national leadership on skills development for American workers. The framework for this new national leadership is described in eight broad recommendations.
>
> These recommendations represent a significant new role for the Department [of Labor].
>
> PART A. THE NEW MODEL--CREDENTIALING STRUCTURED WORK-BASED TRAINING PROGRAMS
>
> 1. Expand structured work-based training programs through development and implementation of new training program models based on features of apprenticeship.
>
> 2. Establish a national work-based training body to recommend policy and provide direction for supporting and assisting in the delivery of work-based training programs.
>
> PART B. STRENGTHENING THE BASIC APPRENTICESHIP MODEL
>
> 3. Streamline and coordinate Federal regulations and policies affecting apprenticeship in order to encourage expansion of the basic apprenticeship model.

4. Improve administration of the existing system so that it operates effectively and fairly.

PART C. SUPPORT AND EXPANSION OF STRUCTURED WORK-BASED TRAINING PROGRAMS, INCLUDING APPRENTICESHIP

5. Enhance the recognition value of program sponsorship and certification of skill attainment by instituting program criteria designed to ensure quality.

6. Develop work-based learning alternatives for noncollege-bound youth to assist them in effectively making the transition from school to a meaningful career path.

7. Provide additional incentives to encourage employers to adopt structured work-based training programs.

8. Intensify publicity at national, state and local levels.

Investing in People: A Strategy to Address America's Workforce Crisis. Washington, D.C. U.S. Department of Labor, Commission on Workforce Quality and Labor Market Efficiency, September 1989.

The Commission on Workforce Quality and Labor Market Efficiency was established by the U.S. Department of Labor. Commission members were appointed by the Secretary of Labor and were "charged with making specific recommendations for the Department of Labor and the nation to increase the excellence of the American workforce." The final report contained forty-four specific recommendations grouped into four categories: (1) The Foundation of Workforce Quality, (2) Lifetime Education and Training, (3) Putting Quality To Work and (4) Understanding The Workforce. Category One included the following recommendations:

2. The business community should increase its presence in the schools, work with parents and school personnel, talk directly with students, and show through their hiring and promotion decisions that academic achievements will be rewarded.

3. Schools should encourage the business community to provide the information needed to develop classroom instruction that anticipates emerging workplace needs.

4. Schools should offer applied instruction, such as vocational technical education, that emphasizes transferable academic skills including reading, mathematics, science, communications, and problem-solving.

7. High-school students who excel in science and mathematics should be rewarded with business internships or grants for further study.

9. National educational and employers' associations should work together to develop easily understood credentials, based on voluntary achievement testing programs...

10. Schools should work with...Private Industrial Councils to establish school-based employment services with direct connections to employers.

12. Teachers who do their jobs well, either as individuals or as members of school faculties, should be recognized and rewarded, both professionally and financially.

13. Federal, state and local governments should increase their efforts to give recognition to school administrators and school systems whose students and teachers display significant gains.

14. The U.S. Department of Education, in cooperation with state departments of education, should encourage experimentation involving fundamental restructuring of schools. Encouragement should include grants, technical assistance, and regulatory flexibility. The business community should offer schools the benefit of its experience in organizational restructuring.

Corporate Action Agenda: The Business of Improving Public Education. [Executive Summary.] Washington, D.C.: National Alliance of Business, [n.d.].

The National Alliance of Business has initiated one of the most extensive cooperative ventures and outreach programs in the United States. "With its Corporate Action Agenda, the National Alliance of Business supports corporate initiatives directed to purposeful, results-oriented actions to improve American public education."

> Components of the Alliance's Corporate Action Agenda include a series of "how-to" publications and videos and a range of activities to disseminate "cutting-edge" ideas and practices throughout the country.

Publications include:

- Corporate Action Agenda: The Business of Improving Education (Executive Summary)
- Building A Quality Workforce Video
- America's Leaders Speak Out On Business-Education Partnerships
- A Blueprint for Business On Restructuring Education
- Business Strategies That Work: Corporate Collaborations To Improve Education
- Who Will Do The Work? A Business Guide for Preparing Tomorrow's Workforce
- The Compact Project: School Business Partnerships for Improving Education

While more business are becoming involved in education improvement efforts, there are still too few quality partnerships that result in education reform.

On the positive side, business has generated:

- A Growing Number of Partnerships
- More Sophisticated Partnerships
- Sustained Corporate Interest in Public

Education
- Increased Knowledge About What Works Best For Whom And Under What Circumstances

However, even with these positive efforts, the quality of American education is still a substantial problem, particularly in our larger, urban communities:

- Too Few Partnerships Designed to Tackle The Toughest Issues
- Imperfect Flow Of Information
- Piecemeal Successes With No Coherent National Approach

Labor Force 2000: Corporate America Responds. Allstate Forum on Public Issues. [1989.]

During the past decade a growing number of corporations have become involved with public education in America. "What has been lacking, though, is a coordinated approach; a plan that provides for ongoing cooperation among education, business, and the community as a whole."

> To help address that issue, the Allstate Forum on Public Issues gathered representatives from hundreds of major U.S. corporations...
>
> Attendees heard from leaders in government, academia and business.
>
> And in the end, they concluded improving education should not be left solely to educators and executives. If the system serves the community as a whole, then the community must help the system understand its needs and meet its objectives.
>
> ...companies can--and should--serve as a catalyst for focusing the larger community's attention on educational priorities and objectives.

Labor Force 2000: Corporate America Responds consists of six separate reports developed by task forces created at the Allstate Forum on Public Issues. The report dealing with "Human Resources" contains three sections:

Section 1 - Important skills and behaviors that employers need in potential employees.

Section 2 - Collaborative relationships between local businesses and schools which address human resource needs.

Section 3 - Measurements that can be used to gauge the success of the students, programs and collaborations.

Section one of the report states that "the skills necessary for employment should be defined in two categories, academic and behavioral."

Academic Skills

Reading: the ability to read and comprehend an employee handbook or to handle customer correspondence.

Writing: the ability to communicate non-technical information in a clear and concise format, using good grammar and correct spelling; the ability to understand ideas and communicate them in writing.

Computer Literacy: the ability to understand computer concepts; keyboard skills.

Calculating: the ability to add, subtract, multiply, and divide without a calculator; the ability to make change and balance a checkbook.

Language skills: the ability to communicate in English.

Learning: the ability to continue a lifetime pattern of growth.

Reasoning: the ability to put a number of different concepts together in a logical form for problem analysis; the ability to draw conclusions; the ability to show good judgement and common sense in decision-making.

Speaking: the ability to communicate orally; grammatically and persuasively.

Organizing: the ability to set priorities and manage them.

Listening: the ability to listen for content and emotional meaning and to follow oral instructions.

Such academic skills provide the foundation for decision-making and problem-solving. Nevertheless, we also need to focus on behavioral skills that provide the underpinning for a strong work ethic.

Behavioral Characteristics

Concern for others

Ability to work in teams

Commitment to quality

Self-esteem and self-motivation

Dependability, discipline, and a sense of responsibility

Integrity and loyalty

Competitiveness and an achievement orientation

Creative thinking and problem-solving

Acceptance of constructive criticism

Coping skills

Appreciation of the roles of leadership and "followership"

Respect for others, including authority

With such requirements established, business and education then can look squarely at what must be done to ensure that students are adequately prepared to fill the jobs that await them. Some of the tasks necessary to prepare students to become workers lie in the hands of educators; others lie in the hands of business. Nevertheless, with basic employability skills defined, business and education can work together using a common language and shared goals.

CRITICAL ISSUES

At the onset of this project the researchers had hoped to identify some very specific elements that could be immediately applied by the vocational education structure in New Jersey. After a year of real-world interaction with the various constituencies associated with the vocational education/employment matrix, we take a different stand. We have become acutely aware of several critical issues which must be addressed before the desired success of vocational education is fully realized.

The following six critical issues or "needs" are not to be considered as all inclusive, but rather represent the most frequently expressed issues identified during the data gathering phases of this project.

1. Competencies for Employment

There is general agreement that competencies for employment need to be identified. However, the types of competencies identified by the employment sector as being most important differ from those identified by the educational sector. A much greater emphasis is placed on academic/work-attitude/behavioral competencies than on technical skills by the business/industrial complex.

2. Standards: Their Development and Use

The development and use of standards is closely related to the identification of competencies, and, in fact, seems to be the next logical concern. Once competencies have been identified, minimum standards need to be established and used as a base for "credentialing" programs in vocational education. This would provide the employment sector with "prior-delivery assurances" regarding incoming employees.

3. Accountability of Programs

The identification of competencies and the development and use of standards is of little meaning unless all sectors of the educational structure are held accountable. Fiscal support for programs should be directly tied to the ability to deliver the educational "product." The most voiced stand of the business/industry community was succinctly worded by one of its members as follows: "Identify the needed competencies, establish standards for the schools, and make them accountable. Run it like a business. And if your product is inferior, you deserve to go out of business."

4. The Business-Industry-Education Linkage

Although most vocational education programs have existing, and in many cases well established,

relationships with the business/industry community, even more needs to be done in this area. All three areas share a common goal--the development and delivery of viable employability skills. However, some of the tasks necessary to meet this goal are more easily delivered by the educational sector and some are more easily delivered by the employment sector. A more extensive involvement of business/industry in the planning and delivery of educational programs would be beneficial to all parties. Educators tend to believe that they are far more knowledgeable regarding educational theory and practice. The business/industrial community strongly believes that they are the experts on what works in the real world.

5. Marketing Vocational Education Services

Virtually all vocational schools and most vocational programs engage in some form of marketing their offerings. While many structures are highly commendable, the business/industry community generally believes them to be insufficient. Too few students are fully aware of the options offered by vocational education; too few parents can advise their children about programs or schools; too few employers are tied to programs because they lack knowledge; and too few guidance counselors view vocational education as an option for the "bright" student. Vocational education is a product--a superior product--and it needs to be marketed.

6. Addressing Cultural Diversity

The workforce is changing. It is changing with regard to age levels, numbers and preparation; but most dramatically, it is changing in cultural diversity. Women, minorities and immigrants will be a major component of the labor force of the future. Despite the various programs which address women and minorities in the workplace, little significant change has taken place. Education, business and industry must work with community groups and the related constituencies to develop programs that consider "hidden" factors that program developers have failed to consider in the past.

ADDITIONAL RESEARCH NEEDED

All of the previously identified critical issues need to be addressed before the full potential of New Jersey's vocational education system is realized. However, logic dictates that a starting point must be identified. A review of the six issues will show that the first three items are directly tied to one another, each building upon the preceding item. The remaining three items can stand independently.

1. Competencies for Employment

   Competencies for employment must be identified in three major categories:

   a. Technical Competencies - job specific skills

   b. Academic Competencies - the knowledge base for decision-making and problem solving

   c. Behavioral Competencies - the underpinning for a strong work ethic

2. Standards: Their Development and Use

   Minimum standards must be identified for entry level and sustained employment in each of the vocational areas.

   The identified standards should become the base for curriculum development and program "credentialing".

3. Accountability of Programs

   Methods of determining "value added" by vocational education programs need to be developed.

   Means of determining fiscal support based on "value added" delivery need to be developed.

   The "value added" model(s) should be explored for possible application on other educational levels.

4. The Business-Industry-Education Linkage

The role of business, industry and education in the B-I-E link must be more clearly defined and areas identified in which each member can be more effective.

5. Marketing Vocational Education Services

Marketing strategies/procedures need to be identified to address the various constituencies of vocational education. These include:

a. students
b. parents
c. employers
d. guidance counselors

6. Addressing Cultural Diversity

Research must be undertaken to explore the "hidden" factors that deter women, minorities and migrants from reaching their full potential in the labor force.

SELECTED BIBLIOGRAPHY

In addition to the many individuals from the educational, industrial, business and governmental community who provided input for this project, an extensive number of reports and studies were reviewed. The following selected bibliography identified those documents which were of significant value in determining the direction and consequently the outcome of the New Jersey Vocational Needs Assessment Project. It should be noted that all of the items listed in this bibliography were issued within the time period beginning January 1987 and ending in June of 1990.

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